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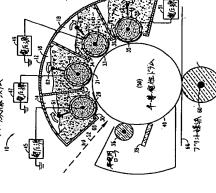
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(54)【発明の名称】 電子写真式カラープリントシステム

で光導電性ドラム上の静電階像を現像する構造の電子写 真式カラーブリンタで、現像を行う際にローラをドラム 【目的】ローラにカラートナーを付着させ、このトナー に対して移動させる必要がないようにする。 (修正有) (57) [要約]

[構成] 夫々シアン、マゼンタ、イエロー、ブラックの これらのローラの被面にはトナーが降く付着した状態で 8の近傍を通過する。ドラム50の今回の回転で現像を 行いたい色のカラートナーが付着しているローラ (22 ~28の中の1つ) にだけ電圧頭45~51から交流及 び直流電圧を印加することにより、当該ローラ上のカラ 光導電性ドラム50の静電潜像が形成されている要面4 トナーが入っているコンパートメント14、16、1 8、20内でローラ22、24、26、28が回転し、

トナーが対向する静電潜像に顕択的に飛び移る。



77-71129风像3x3人

| 特許請求の範囲|

|静水項1|| 下記の(a)ないし(c)を含んでなる電子写真 式カラープリントシステム

(a)シアン、イエロー、マゼンタ、プラックのカラート ナーを供給する手段

前記光導電性ドラムの接面から予め定められた距離の固 定位置に数けられたシアン、イエロー、マゼンタ、ブラ (b) 前記トナーと光導電性ドラムの装面との間であって ックの現像ローラ;

ローラの表面に送り届け、もって前配カラートナーを前 しながら前記現像ローラを交流及び直流信号で選択的に 駆動することによって帯電したカラートナーを前記現像 記光導電性ドラムの接面に選択的かつ静電的に射出する (c) 前配現像ローラに接続され、前配現像ローラを回転

[発明の詳細な説明]

[000]

関し、より詳しくは位置固定型の現像ローラを使用した ンタとしても知られている電子写真式カラープリンタに |産業上の利用分野||本発明は、広義には、レーザプリ 材出型電子写真式カラープリンタ(projection type of slectrophotographic color)に関する。

[0.002]

出願の出願番号第07/758,011号の「電子写真 る媒体を制御するために有用かもしれない種々の紙運動 プリンタにおける媒体のカールを低減させるための改良 **【従来技術及びその問題点】本願においてプリントされ** 制御方法が、1990年8月2日出願の出願番号第07 /561,831号の「電子写真式カラープリントにお ける紙収縮及びミスアラインメントを補償するための方 法及び装置」という名称の発明、1991年9月12日 された方法及び装置」という名称の発明、及び1991 「電子写真式カラープリント方法及び装置」という名称 年12月出願の出願 (ケースNo. 189155) の の発明に記載されている。

助かして近接する光導配性ドラムと接触、離脱させるこ とが知られている。これらのカラートナーは、光導電性 ドラムの要面へ選択的に付着させられ、そこで現像され は、光導電性ドラムの投面にシアン、イエロー、マゼン ン、イエロー、マゼンタ及びプラックの各現像ローラを 【0003】電子写真式カラープリントの分野において 次にこれらのカラーイメージはドラムに接するプリント タ及びブラックのカラートナーを付着させるためにシア て、光導電性ドラムの按面上にカラーイメージを生じ、 媒体へ順次転算される。

になるか、あるいはシアン、マゼンタ、イエロー及びプ ラー現像システムの1つの欠点は、現像ローラの物理的 運動を制御するためにモータで駆動されるカム等が必要 [0004] 光導電性ドラムの表面に対してこれらの現 像ローラを接触、離脱させるこれらの従来技術によるカ

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ために回転カルーゼルが必要になることである。いずれ に関連した機械上の欠点が伴う。従って、本発明が目指 しているものは上述したような従来技術による電子写真 ラックの現像ローラを光導電性ドラムに順次接触させる の場合にも、高度に制御された運動をこれらの現像ロー ラに与えるために必要とされる機械的精度と高いコスト 式カラープリントの欠点を解消することである。

[0005]

으

一ラを用いる新規な構成を有する新規で改良された射出 このようにすれば、回転運動以外の機械的運動をこれら の現像ローラに与える必要がなく、この方法によってカ [目的] 本発明の一般的なまた主要な目的は、光導電性 ドラムの表面に近接させて固定位置に設けられた現像ロ ラーブリントシステムにおける従来技術のカルーゼルや カム駆動現像ローラに付随する上述のような欠点が解消 型の電子写真式カラープリンタを提供することにある。

[0006] 本発明の他の目的は、上述したような種類 の電子写真式カラープリンタであって、比較的単純から 経済的であり、また動作の信頼性が高く、可動部及び保 守の必要性をできるだけ小さくした新規で改良された電 子写真式カラープリンタを提供することにある。 8

[00.07] 本発明の他の目的は、上述したような種類 ント方法であって、色平面が相互に正確に被着されるた めに光導電性ドラムの位置及び形がそれほど重要ではな い新規で改良されたカラープリンタ及びカラープリント の電子写真式カラープリンタ及び電子写真式カラープリ 方法を提供することにある。

[8000]

コンパートメント内で上述した各現像ローラを同時に回 では、とりわけ、光導電性ドラムの玻面に近接させてシ を散け;シアン、イエロー、マゼンタ及びブラックの現 の光導配件ドラムの近接した安面へ選択的に静配的にト ートナーはこの後、レーザ光ビームまたは同等の現像伯 イメージは、次に、光導電性ドラムの装面と近接する転 【概要】上述の目的を達成するため、本発明の一実施例 象ローラを上述したカラートナーとドラムの光導配面と の間であって光導電性ドラムの安面から予め定められた **距離にある固定された位置に設け;各々のカラートナー 版させつしこれらの現像ローラを交流及び直流信号によ った過状的に駆動し、これによって現像ローラの牧面か** より、シアン、イエロー、マゼンタ及びプラックのカラ 耳□─ラの間を通過するプリント媒体の按面へ順次転写 アン、イエロー、マセンタ及びブラックのカラートナー 号顔を用いて選択的に放電してある光導電性ドラムの安 **五上で頃次現像される。カラープレイン内で現像された** ナーを射出(project)する。この技術を使用することに 8 9

50 に示した本発明の好適な実施例の以下の記述から、その [0009] 上述した本発明の概要は、図面中に概念的

新規な特徴及びそれに伴う長所とともにより良く理解さ れるようになるであろう。

[0010]

ン、マゼンタ、イエロー及ブラックの着色トナーを収容 32、34及び36に近接した固定位置に回転可能に取 プリンタ現像システムには、図示のようなテーパ形状の 複数のカラートナーコンパートメント14、16、18 ゼル12が含まれている。これらの各カラートナーコン し、またその内部には、これらの各テーパ状コンパート り付けられた1個の現像ローラ22、24、26及び2 及び20を有する、固定位置、つまり回転しないカルー [実施例] 図1において、全体を記号10で示すカラー メント14、16、18及び20の底壁の関ロ部30、 パートメント14、16、18及び20は、夫々シア 8 がそれぞれ散けられている。

いる。これらの電圧顔45、47、49及び51によっ された現像ローラ上に発生する電圧は交流成分と直流成 イメージ倒換の-600Vの亀田の間に設定すべきでも 29、31、33及び35を電界によって駆動して、光 26、第5号、1982年9月/10月、に配載された それぞれ回転駆動され、またこれらの各ローラはそれぞ れ別個の電圧顔45、47、49及び51に接続されて てローラ22、24、26または28のいずれかの選択 分から成る。直流成分は約-400Vで、光導電性ドラ ム50の要面48上の潜像領域の-100Vの電圧と非 Takahaski 他による"Mechanism of Canon Toner Proj は、それらの中心軸38、40、42及び44の回りに されているように、イメージの出現を強化するため約2 る。このように設定された電圧は、負に帯電したトナー る,更に、Photographic Science and Engineering 巻 ectionDevelopment"という教題の論文中に詳細に説明 [0011] 各現像ローラ22、24、26及び28 **導電性ドラム50上のイメージ領域に現れるようにす**

【0012】上述した各現像ローラ22、24、26及 び28は、光導電性ドラム50の外接面48に対して射 出されるトナー層の厚さの2倍より僅かに大きい距離を 隔てて光導電性ドラム50の装面48の上方の固定位置 に注意深く位置決めされている。現像ローラ22、2 00Hz、1000Vppの交流電圧が印加される。

レード(doctor blade)68、70、72及び74によっ のトナー商を現像ローラ22と光導電性ドラム50との パートメント14、16、18及び20内のドクターブ て調節される。現像ローラ22、24、26及び28上 **ーションの下を通過する際に攪乱されるのを防ぐことが** できる。従って、この手法は、トナーが外部から印加さ れる電界を用いてギャップを横切って射出されるように 4、26及び28上のトナーの高さは、各々トナーコン 光導電体装面上に現れたカラートナーが次の現像剤スラ 間のギャップの2分の1より小さくすることによって、

る射出現像システムに適用することができる。

がこれらのローラの表面に磁気的にまた静電的に引きつ 及び20内で近くにあるシアン、マゼンタ、イエロー及 けられ、引き付けられたトナーは、次に、これらの現像 ローラの所望の1つに交流及び直流信号が選択的に印加 **ず)かののフーヂガーム52によって生じた猫袋がカレ** 4、26及び28がコンパートメント14、16、18 **ぴブラックトナーの中を動くときに、 若色されたトナー** されたときだけ、静電気の力により光導電性ドラム50 の要面48~射出される。このようにして、各着色トナ 一が選択的に光導電性ドラム50の要面に射出され、光 **一イメージとして現れる。このような射出型現像システ** 中に開示され、キャノン株式会社によって開発されたも ムとしては、例えば上に引用した Takahaski 他の論文 導電性ドラム50の装面上には、レーザ光顔(図示せ 【0013】この手法を用いると、現像ローラ22、 2

8を有し、この転写ローラは図示のようにプリント媒体 及び64を有し、これらの攪拌プレードは現像ローラ2 軸60の回りに回転可能に取り付けられた転写ローラ5 6 6 または他の適切な中間転写部材 (図示せず) が通過 シアン、イエロー、々ゼンタ及びプラックの各コンパー トメント14、16、18及び20内の図示位置に設け られた回転可能なトナー攪砕プレード61、62、63 2、24、26及び28の表面でのトナーの均一性を維 **存するために マナーコンペートメント内で所留量の複雑** は、光導電性ドラム50の表面上に所望レベルの静電荷 を与えると共に、個々に射出させられるカラートナーに 56を有する。図1の射出システム10は、更に、中心 する位置において光導電性ドラム50の安面48に極近 [0014] 図1に示すカラー現像システムは、また、 **沂望のレベルの静電吸引力を与えるための帯電用ロー:** が行われるよう作用する。図1.のカラー現像システム **安するよう位置決めされる。**

媒体66の衰面に定着された後、周知の紙送り/制御技 【0015】従って、その動作を見るに、プリント媒体 色毎に360。の経路を移動して、これらの各色に発現 **卸するための適切な制御技術は、本顧出顧人による前記** 66は、シアン、マゼンタ、イエロー及びブラックの各 したイメージが光導電性ドラム50の安面から媒体66 へ順次転写される。プリント媒体66は一連の工程の各 々に、以下に図2により説明する定着ローラ90と92 の間に霰内され、ここで合成カラーイメージがプリント る。上述したカラープリント過程における紙の運動を制 術を用いた出力紙捕集トレイまたはピンへ送り込まれ

タのハウジング80が示されており、これには、例えば 本顧出願人の LaserJet プリンタで現在使用されている 形態の入力紙トレイ82及び出力紙補集ピン84が設け [0016]次に、図2には、電子写真式カラープリン

යි

した本願出願人のの LaserJet プリンタで用いられてい

ラートナーを受け取るにつれて、紙66は光導電性ドラ 8 6 は、内部にある図1のカラー現像システムの紙運動 場係を見ることができるように配号88で示す部分を切 除して描かれている。もちろん、これらの用紙ガイド機 構は前述の転写ローラ58に近接して取り付けられた光 導電性ドラム50を含み、図1を参照して上に説明した 交流と直流が同時印加されるカラートナーを射出するロ **一ラ22、24、26及び28から現像ドラム50がカ** られている。 図示のプリンタハウジングの手前側の側壁 を制御するための用紙ガイド機構に対する概略的な位置

イドローラ96と98の閲を通り、更に第2の湾曲した ノ、イエロー、々ゼンタ及びブラックのカラーイメージ は、紙62はまず第1の萬曲した用紙ガイド割材94の 内面に沿って送られ、次いで第1の一対の下側の用紙ガ 用紙ガイド部材104がまわりに配置された第2の一対 の用紙ガイドローラ100と102の間を通って送られ る。紙62が上述の360。経路を通る連続して起こる 3回の工程を完了すると、紙62は定着ローラ90、9 2 から上向きになった紙偏向部材106の桜面に沿って 矢印108の方向に移動させられ、紙捕集ピン84の遠 92を含む。これらの定着ローラ90、92は上述の4 を周知の方法により順次紙62に答着する。この工程で -対の出力定着ローラ(output fuser roller)90及び ム50と転写ローラ58との間を続けて4回通される。 [0017] 図2に示す用紙ガイドシステムは、更に、 回連続して起こる360°の経路に渡る工程で、シア 発回の紙出ロポート110から送り出される。

できる。図1及び2に簡略化して概要を示した本発明の [0018] 本発明の精神及び範囲から逸脱することな く、上述した実施例に対して種々の修正を加えることが カラー現像システムは、カラーイメージ現像操作の一般 原理を例示説明することを目的としたものであり、何ら ノジニアがなしうる。従って、本題特許請求の範囲から **一の、マゼンタ及びブラックの域方混色法のみによる使** このような理由により、ここに書かれた好適な実施例は 簡略化された概念的な図画の形態で説明したが、何か特 その設計や選択や変更は当該技術に習熟した設計者やエ かの特定ハードウェアや設計、あるいはシアン、イエロ 用に限定ることを意図したものでは全くない。従って、 定の構成上のハードウェアに限定されるものではなく

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逸脱することなく、当弊者が図1及び図2に対する多く の機械的な設計変更を行うことができる。

2ローラを光導電性ドラムに接触・離脱させるように移 **効果】以上詳細に説明したように、本発明によれば現** 動させる必要がなくなるので、設計・製造・保守が容易 な電子写真式カラープリンタを提供することができる。

[図2] 図1のカラー現像システムがカラーレーザブリ ンタ中にどの様に収容されるかを示す斜視図 **示す概念的断画図。**

|図1| 本発明の一実施例によるカラー現像システムを

図面の簡単な説明】

[毎号の説明]

0:カラープリンタ現像システム 2:カルーゼル

4、16、18、20:カラートナーコンパートメン

24、26、28:現像ローラ 29, 31, 33, 35: 17-

30、32、34、36:関ロ部 8

38、40、42、44:中心軸 5、47、49、51: 电压源

: 0:光導電性ドラム

56:帯電用ローラ

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31、62、63、64:トナー攪枠プレード

68、10、12、14:ドクターブレード 56:プリント報符 ಜ

80:ヘウジング

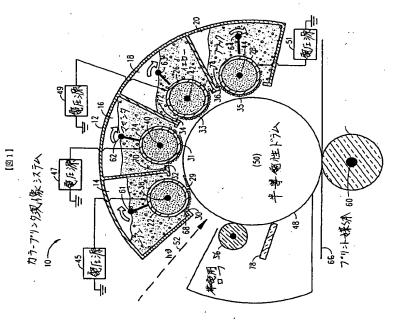
4 : 出力衛権継アン 2:入力紙トレイ

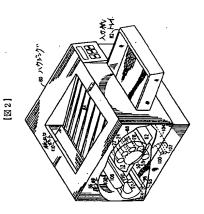
0、92:定着ローラ

34、104:用紙ガイド部材

36、98、100、102:用紙ガイドローラ 06: 無偏向部材

. 10:常田ロボート





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[手続補正1]

[補正対象書類名] 明細書

[補正対象項目名] 特許請求の範囲 [楠正方法] 変更

[補正内容]

【請求項1】次の(イ)から(ハ)の工程からなる電子 写真式カラープリント方法。 [特許請求の範囲]

数面との間であって前記光導電性ドラムの数面から予め 定められた距離の固定位置に設けられたシアン、イエロ を回転しながら前記現像ローラを交流及び直流信号で選 **択的に駆動することによって帯電したカラートナーを前** 記現像ローラの要面に送り届け、もって前記カラートナ (イ) シアン、イエロー、マゼンタ、ブラックのカラー トナーを供給し、(ロ)前記トナーと光導電性ドラムの と、(ハ)前配現像ローラに接続され、前配現像ローラ **一を前記光導電性ドラムの表面に選択的かつ静電的に射** - 、マゼンタ、ブラックの現像ローラを提供する手段

カラーイメージを降接するプリント媒体要面に順次転写 し、前記プリント媒体は前記ドラムと転写ローラのあい [請水項2] 請水項1記載の電子写真式カラープリント 方法はさらに前配光導電性ドラムの表面から現像された だを行き来させる工程を含むことを特徴とする電子写真 式カラープリント方法。

[請求項3] シアン、イエロー、マゼンタ、プラッグの カラートナーを供給する手段と、前配トナーと光導電性 ドラムの表面との間であって前配光導電性ドラムの接面 ン、イエロー、マゼンタ、ブラックの現像ローラと、前 **記現像ローラに接続され、前記現像ローラを回転しなが** から予め定められた距離の固定位置に設けられたシア

ることによって帯電したカラートナーを前記現像ローラ の数面に送り届け、もって前記カラートナーを前記光導 聞性ドラムの接面に選択的かつ静電的に射出する手段と を含むことを特徴とする電子写真式カラープリントシス ら前配現像ローラを交流及び直流信号で選択的に駆動す

[請求項4] 請求項3記載の電子写真式カラープリント システムはさらに前記光導電性ドラムの装面から現像さ れたカラーイメージを隣接するプリント媒体表面に順次 転写し、前記プリント媒体は前記ドラムと転写ローラの あいだを行き来させる手段を含むことを特徴とする電子 写真式カラープリントシステム。

【請求項5】請求項5記載の電子写真式カラープリント ンステムはさらに前記現像ローラのそれぞれに隣接する ように設けらた前記光導電体ドラム〜カラートナ<u>ーの量</u> を制御することを特徴とする高さ闘難ドクターブレード と含むことを特徴とする電子写真式カラープリントシス |請水項6||請水項4記載の電子写真式カラープリント ノステムはさらに、前記プリント媒体を前記各カラーイ 一ジの順次転写のための360。通路を移動させる=

ご着ローラを通過し、出力紙補集トレイまたは<u>ビンまで</u> g内する手段とを含むことを特徴とする電子写<u>真式カラ</u> 前記プリント媒体上の現像された合成カラーイメージを

ィステムはさらに前配現像ローラのそれぞれに隣接する うに設けらた前配光導電体ドラムヘカラートナーの量 を制御することを特徴とする高き調整ドクターブレード を含むことを特徴とする電子写真式カラープリントシス |静水項7|| 請水項6記載の電子写真式カラープリン

<u>テム。</u> 【手続補正2】

剪標)プリンタで用いられている射出現像システムに適

用することができる。 手統補正3】

[補正対象項目名] 0012 植正対象書類名】 明御書

[補正方法] 変更 [補正内容]

[補正対象書類名] 明細書

【補正対象項目名】0015 [補正方法] 変更

色毎に360°の経路を移動して、これらの各色に発現 媒体62の表面に定着された後、周知の紙送り/制御技 [0015] 従って、その包作を見るに、プリント模体 3.2は、シアン、マゼンタ、イエロー及びブラックの各 したイメージが光導配性ドラム50の数面から媒体6.2 へ順次転写される。プリント媒体62は一道の工程の各 々に、以下に図2により説明する定者ローラ90と92 の間に案内され、ここで合成カラーイメージがプリント る。上述したカラープリント過程における紙の運動を制 析を用いた出力紙構集トレイまたはピンへ送り込まれ [権正内容]

レード (doctorblade) 68, 70, 72及

6及び28上のトナー高を現像ローラ22と光導電性ド ラム50との聞のギャップの2分の1より小さくするこ とによって、光導館体表面上に現れたカラートナーが次 の現像剤ステーションの下を通過する際に撹乱されるの 部から臼加される観界を用いたオナップを描砂りた射出 されるようにした本願出願人<u>のし</u>aserJet<u>(発</u>酸

隔てて光導電性ドラム50の装面48の上方の固定位置

4、26及び28上のトナーの萬さは、各々トナーコン パートメント14、16、18及び20内のドクターブ **ぴ7 4によって調節される。現像ローラ22、24、2**

に注意深く位置決めされている。現像ローラ22、2

[0012] 上述した各現像ローラ22、24、26及 328は、光導電性ドラム50の外装面48に対して射 出されるトナー層の厚さの2倍より僅かに大きい距離を **詢するための適切な制御技術は、本顧出顧人による前記**

を防ぐことができる。従って、この手法は、トナーが外

の特許出題に開示されている。



PATENT ABSTRACTS OF JAPAN

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(71)Applicant: HEWLETT PACKARD CO <HP>

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(72)Inventor: STORLIE CHRIS A

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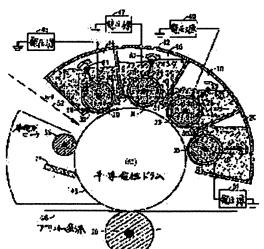
Priority country: US

(54) ELECTROPHOTOGRAPHIC COLOR PRINTING SYSTEM

(57)Abstract:

PURPOSE: To eliminate the need of moving a roller to/from a photoconductive drum at developing, in an electrophotographic color printer having a structure of sticking color toner to the roller and developing an electrostatic latent image on the photoconductive drum by the toner.

CONSTITUTION: The rollers 22, 24, 26 and 28 are rotated in compartments 14, 16, 18 and 20 with cyan, magenta, yellow and black toner stored respectively, and the rollers pass near the surface 48 of the drum 50 on which the electrostatic latent image is formed in a state where the toner thinly sticks to the surface of each roller. By applying AC and DC voltages from voltage sources 45 to 51 on the only roller (one of rollers 22 to 28) with desired color toner for developing stuck with this rotation of the drum 50, the color toner on the roller selectively jumps on to the opposed electrostatic latent image.



LEGAL STATUS

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JAPANESE [JP,05-307310,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE INVENTION
TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION
Or AMENDMENT

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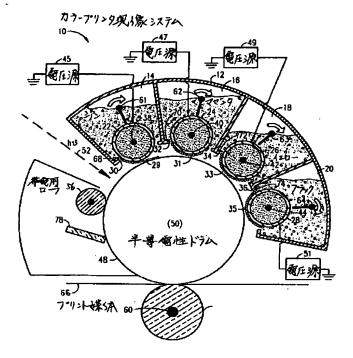
CLAIMS

[Claim(s)]

[Claim 1] A means to supply the electrophotography formula color-print system:(a) cyanogen which comes to contain the following (a) or (c), yellow, a Magenta, and the color toner of black;

- (b) The cyanogen prepared in the fixed position of the distance which is between the aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, developing roller of black;
- (c) A means to connect with the aforementioned developing roller, to send and have the color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, rotating the aforementioned developing roller in the front face of the aforementioned developing roller, and to inject the aforementioned color toner to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic.

Drawing selection [R presentativ drawing]



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JAPANESE	[JP,05-307310,A]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the injected type electrophotography formula color printer (projection type of electrophotographic color) which used the developing roller of a position cover half for the wide sense in more detail about the electrophotography formula color printer known also as a LASER beam printer.

[0002]

[Description of the Prior Art] The various paper kinematic-control methods which may be useful in order to control the medium printed in this application Invention of a name called the application number 07th / "the method and equipment" for compensating the paper contraction and misalignment in an electrophotography formula color-print of No. 561,831 of August 2, 1990 application, Invention of a name called the application number 07th / "how to have been improved for reducing curl of the medium in an electro photographic printer and equipment" of No. 758,011 of September 12, 1991 application, And it is indicated by invention of a name called "the electrophotography formula color-print method and equipment" of application (case No.189155) of application in December, 1991.

[0003] in the field of an electrophotography formula color-print, in order to make cyanogen, yellow, a Magenta, and the color toner of black adhere to the front face of a photoconductivity drum, each developing roller of cyanogen, yellow, a Magenta, and black is moved, and it approaches -- contacting [a photoconductivity drum and] and making it break away is known These color toners are made to adhere to the front face of a photoconductivity drum alternatively, negatives are developed there, a color image is produced on the front face of a photoconductivity drum, and, next, these color images are imprinted one by one to the print medium which touches a drum.

[0004] One fault of the color development system by such conventional technology of contacting and making it seceding from these developing rollers to the front face of a photoconductivity drum is that a rotation carousel is needed in order the cam driven by the motor in order to control physical movement of a developing roller is needed or to contact the developing roller of cyanogen, a Magenta, yellow, and black to a photoconductivity drum one by one. The fault on the machine relevant to the mechanical precision which in any case is needed in order to give movement controlled highly to these developing rollers, and high cost follows. Therefore, what this invention aims at is canceling the fault of the electrophotography formula color-print by the conventional technology which was mentioned above.

[0005]

[Objects of the Invention] The general purposes of this invention main again are to offer a new and improved injection [in which it has the new composition using the developing roller which was made to approach the front face of a photoconductivity drum and was prepared in the fixed position] type electrophotography formula color printer. If it does in this way, it is not

necessary to give mechanical movement except rotation to these developing rollers, and the above faults which accompany the carousel and cam-action developing roller of the conventional technology in a color-print system by this method will be canceled.

[0006] Other purposes of this invention are the electrophotography formula color printers of a kind which was mentioned above, and they are comparatively simple and economical, and its reliability of operation is high, and they are to offer the new and improved electrophotography formula color printer which made moving part and the need for maintenance as small as possible.

[0007] Other purposes of this invention are the electrophotography formula color printers of a kind and the electrophotography formula color-print methods which were mentioned above, and since a color flat surface is put mutually correctly, the position and form of a photoconductivity drum are to offer the new and improved color printer and the color-print method which is not so important.

[8000]

[Summary of the Invention] In order to attain the above-mentioned purpose, in the one example of this invention Especially, the front face of a photoconductivity drum is made to approach and cyanogen, yellow, a Magenta, and the color toner of black are formed.; cyanogen, Yellow, The developing roller of a Magenta and black the fixed position in the distance which is between the color toners and the photoconduction sides of a drum which were mentioned above, and was beforehand defined from the front face of a photoconductivity drum -- preparing --; -- these developing rollers, rotating simultaneously each developing roller mentioned above within each color toner compartment It drives alternatively by an alternating current and the direct current signal, and a toner is alternatively injected to electrostatic to the front face where the photoconductivity drum approached from the front face of a developing roller by this (project). By using this technology, cyanogen, yellow, a Magenta, and the color toner of black are developed one by one after this on the front face of the photoconductivity drum on which it has discharged alternatively using the laser beam beam or the equivalent source of a development signal. Next, the image developed within the color plane is imprinted one by one to the front face of a photoconductivity drum, and the front face of the print medium which passes through between the approaching imprint rollers.

[0009] The outline of this invention mentioned above will be better understood with the advantage accompanying the new feature and new it from the following description of an example with this invention suitable in a drawing shown notionally.
[0010]

[Example] In drawing 1, the fixed position and the carousel 12 which does not get blocked and rotate which has two or more color toner compartments 14, 16, 18, and 20 of a taper configuration like illustration are contained in the color printer development system in which the whole is shown with a sign 10. One developing rollers 22, 24, 26, and 28 attached in the fixed position which each of these color toner compartments 14, 16, 18, and 20 held the coloring toner of cyanogen, a Magenta, and yellow ** black, respectively, and approached the openings 30, 32, 34, and 36 of the bottom wall of each of these taper-like compartments 14, 16, 18, and 20 in the interior possible [rotation] are formed, respectively.

[0011] The rotation drive of each developing rollers 22, 24, 26, and 28 is carried out around those medial axes 38, 40, 42, and 44, respectively, and each of these rollers are connected to the separate voltage sources 45, 47, 49, and 51, respectively. The voltage generated on the developing roller as which either of the rollers 22, 24, 26, or 28 was chosen by these voltage sources 45, 47, 49, and 51 consists of an alternating current component and a dc component. A dc component is abbreviation–400V and should be set up between the voltage of –100V of the latent–image field on the front face 48 of the photoconductivity drum 50, and the voltage of –600V of a non–imagining field. Thus, the set–up voltage drives the toners 29, 31, 33, and 35 charged in negative by electric field, and it is made to appear in the image field on the

photoconductivity drum 50. furthermore, Photographic Science and Engineering It was indicated in a volume 26, No. 5, and ten September, 1982 / months. Takahaski It is based on others. "Mechanism of Canon Toner ProjectionDevelopme nt" ** -- in order to strengthen the appearance of an image as explained in detail into the paper of the title to say, the alternating voltage of about 200Hz and 1000Vpp is impressed

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades 68, 70, 72, and 74 in 20 (doctor blade). It can prevent being disturbed in case the color toner which appeared on the photo-conductor front face passes through the bottom of the next developer station by making developing rollers 22, 24, and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50. Therefore, this technique is *********** which a toner crosses a gap using the electric field impressed from the outside, and was made to be injected. LaserJet It is applicable to the injection development system used by the printer.

[0013] If this technique is used, when developing rollers 22, 24, 26, and 28 will move within compartments 14, 16, and 18 and 20 in near cyanogen, a Magenta, yellow, and a black toner the toner magnetically drawn and drawn by the colored toner to electrostatic on the front face of these rollers again -- next, only when an alternating current and a direct current signal are alternatively impressed to one of the requests of these developing rollers, it is injected according to the force of static electricity to the front face 48 of the photoconductivity drum 50 Thus, each coloring toner is alternatively injected on the front face of the photoconductivity drum 50, and the latent image produced by the laser beam 52 from a laser light source (not shown) on the front face of the photoconductivity drum 50 appears as a color image. As such an injected type development system, it quoted upwards, for example. Takahaski It is indicated in other papers and there are some which were developed by canon incorporated company. [0014] The color development system shown in <u>drawing 1</u> has the toner stirring blades 61, 62, 63, and 64 which were prepared in each compartments 14, 16, and 18 of cyanogen, yellow, a Magenta, and black, and the illustration position in 20 and which can be rotated again, and in order to maintain the homogeneity of the toner in the front face of developing rollers 22, 24, 26, and 28, these stirring blades act so that stirring of the amount of requests may be performed within a toner compartment. The color development system of drawing 1 has the roller 56 for electrification for giving the electrostatic suction force of desired level to the color toner which you are made to inject by each while giving the electrostatic charge of request level on the front face of the photoconductivity drum 50. The injection system 10 of drawing 1 has the imprint roller 58 attached still more possible [rotation around a medial axis 60], and this imprint roller is positioned so that the front face 48 of the photoconductivity drum 50 may be approached very much in the position through which the print medium 66 or other suitable middle imprint members (not shown) pass like illustration.

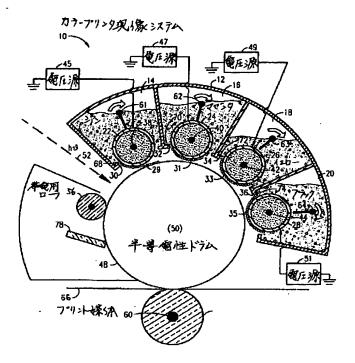
[0015] Therefore, the print medium 66 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 66. The print medium 66 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 66 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent.

[0016] Next, the housing 80 of an electrophotography formula color printer is shown in drawing

2, and it is an applicant for this patent in this. LaserJet The input paper tray 82 of a gestalt and the output paper uptake bottle 84 which are used by the printer now are prepared. The side attachment wall 86 of the near side of printer housing of illustration excises the portion it is indicated with a sign 88 that can see the rough physical relationship over the form guide mechanism for controlling paper movement of the color development system of drawing 1 in the interior, and is drawn. Of course, paper 66 continues between the photoconductivity drum 50 and the imprint rollers 58, and it lets it pass 4 times as the development drum 50 receives a color toner from the rollers 22, 24, 26, and 28 which inject the color toner with which simultaneous impression of the alternating current explained above with reference to drawing 1 and the direct current is carried out including the photoconductivity drum 50 attached by these form guide mechanisms approaching the above-mentioned imprint roller 58. [0017] The form guide system shown in drawing 2 contains the output fixing rollers (output fuser roller) 90 and 92 of a couple further. These fixing rollers 90 and 92 are the processes over the 360-degree above-mentioned path which happens continuously 4 times, and weld [62] the color image of cyanogen, yellow, a Magenta, and black one by one by the well-known method. the form guide to which, as for paper 62, the 1st curved first at this process -- it sends in accordance with the inside of a member 94 -- having -- subsequently -- between the form guide idlers 96 and 98 of the 1st couple bottom -- a passage -- further -- the 2nd -- having curved -- a form -- a guide -- a member 104 is sent through between the form guide idlers 100 and 102 of the 2nd couple arranged around the paper deviation which paper 62 became upward from the fixing rollers 90 and 92 when paper 62 completed 3 times of the processes which pass along above-mentioned 360-degree path, and which happen continuously -- it is moved in the direction of an arrow 108 along the front face of a member 106, and is sent out from the paper exit port 110 by the side of the far edge of the paper uptake bottle 84 [0018] Various corrections can be added to the example mentioned above, without deviating from the pneuma and the range of this invention. There is no color development system of this invention in which it simplified to drawing 1 and 2, and the outline was shown what meant limited ****** to use only by the method color mixture method of a decrease of the Magenta and black of a certain specific hardware, a design or cyanogen, and yellow for the purpose of giving instantiation explanation of the general principle of color image development operation. Therefore, although the gestalt of the simplified notional drawing explained the suitable example written here for such a reason, some are not limited to specific constitutional hardware and the designer and engineer who became skilled in the technology concerned can make the design, selection, and change, therefore, this application -- this contractor can perform many mechanical design changes to drawing 1 and drawing 2, without deviating from a claim [0019][Effect] Since it becomes unnecessary to make it move so that a photoconductivity drum may

[Effect] Since it becomes unnecessary to make it move so that a photoconductivity drum may be made to contact and secede from a developing roller as explained to the detail above according to this invention, a design, manufacture, and maintenance can offer an easy electrophotography formula color printer.

Drawing selection [R presentativ drawing]



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JAPANESE	[JP,05-307310,A]
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<u>CLAIMS DETAILED DESCRIPTION</u> TECHNICAL FIELD <u>EFFECT OF THE INVENTION</u>
<u>TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION</u>
<u>or AMENDMENT</u>

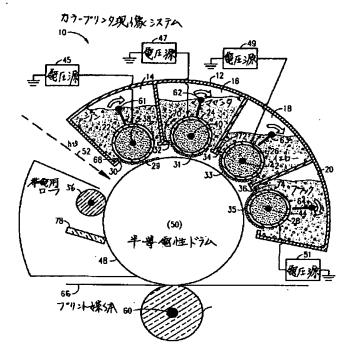
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TECHNICAL FIELD

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Drawing selection [Representativ drawing]



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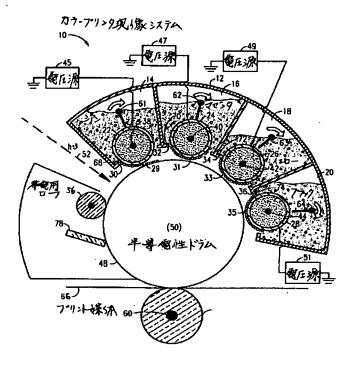
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Q A P A N E S E	1. IP 05-307310 AT

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[Description of the Prior Art] In order to control the medium printed in this application Invention of a name called the application number 07th / "the method and equipment" for compensating the paper contraction and misalignment in an electrophotography formula color-print of No. 561,831 of August 2, 1990 application of the various paper kinematic-control methods which may be useful, Invention of a name called the application number 07th / "how to have been improved for reducing curl of the medium in an electro photographic printer and equipment" of No. 758,011 of September 12, 1991 application, And it is indicated by invention of a name called "the electrophotography formula color-print method and equipment" of application (case No.189155) of application in December, 1991.

[0003] in the field of an electrophotography formula color-print, in order to make cyanogen, yellow, a Magenta, and the color toner of black adhere to the front face of a photoconductivity drum, each developing roller of cyanogen, yellow, a Magenta, and black is moved, and it approaches — contacting [a photoconductivity drum and] and making it break away is known These color toners are made to adhere to the front face of a photoconductivity drum alternatively, negatives are developed there, a color image is produced on the front face of a photoconductivity drum, and, next, these color images are imprinted one by one to the print medium which touches a drum.

[0004] One fault of the color development system by such conventional technology of contacting and making it seceding from these developing rollers to the front face of a photoconductivity drum is that a rotation carousel is needed in order the cam driven by the motor in order to control physical movement of a developing roller is needed or to contact the developing roller of cyanogen, a Magenta, yellow, and black to a photoconductivity drum one by one. The fault on the machine relevant to the mechanical precision which in any case is needed in order to give movement controlled highly to these developing rollers, and high cost follows. Therefore, what this invention aims at is canceling the fault of the electrophotography formula color-print by the conventional technology which was mentioned above. [0005]

[Objects of the Invention] The general purposes of this invention main again are to offer a new and improved injection [in which it has the new composition using the developing roller which was made to approach the front face of a photoconductivity drum and was prepared in the fixed position] type electrophotography formula color printer. If it does in this way, it is not necessary to give mechanical movement except rotation to these developing rollers, and the above faults which accompany the carousel and cam-action developing roller of the conventional technology in a color-print system by this method will be canceled.

[0006] Other purposes of this invention are the electrophotography formula color printers of a kind which was mentioned above, and they are comparatively simple and economical, and its reliability of operation is high, and they are to offer the new and improved electrophotography formula color printer which made moving part and the need for maintenance as small as

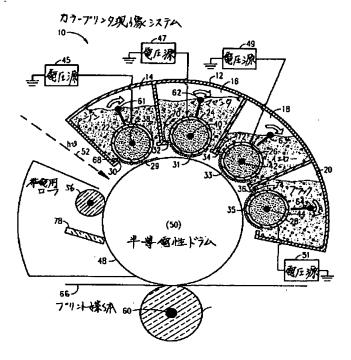
possible.

[0007] Other purposes of this invention are the electrophotography formula color printers of a kind and the electrophotography formula color-print methods which were mentioned above, and since a color flat surface is put mutually correctly, the position and form of a photoconductivity drum are to offer the new and improved color printer and the color-print method which is not so important.

[8000]

[Summary of the Invention] In order to attain the above-mentioned purpose, it is at one example of this invention. Especially, the front face of a photoconductivity drum is made to approach and cyanogen, yellow, a Magenta, and the color toner of black are formed.; cyanogen, Yellow, The developing roller of a Magenta and black the fixed position in the distance which is between the color toners and the photoconduction sides of a drum which were mentioned above, and was beforehand defined from the front face of a photoconductivity drum -preparing --; -- these developing rollers, rotating simultaneously each developing roller mentioned above within each color toner compartment It drives alternatively by an alternating current and the direct current signal, and a toner is alternatively injected to electrostatic to the front face where the photoconductivity drum approached from the front face of a developing roller by this (project). By using this technology, cyanogen, yellow, a Magenta, and the color toner of black are developed one by one after this on the front face of the photoconductivity drum on which it has discharged alternatively using the laser beam beam or the equivalent source of a development signal. Next, the image developed within the color plane is imprinted one by one to the front face of a photoconductivity drum, and the front face of the print medium which passes through between the approaching imprint rollers. [0009] The outline of this invention mentioned above will be better understood with the advantage accompanying the new feature and new it from the following description of an example with this invention suitable in a drawing shown notionally.

Drawing selection [Repr sentative drawing]



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JAPANESE [JP,05-307310,A]
CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE INVENTION TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION or AMENDMENT
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EXAMPLE

[Example] In <u>drawing 1</u>, the fixed position and the carousel 12 which does not get blocked and rotate which has two or more color toner compartments 14, 16, 18, and 20 of a taper configuration like illustration are contained in the color printer development system in which the whole is shown with a sign 10. One developing rollers 22, 24, 26, and 28 attached in the fixed position which each of these color toner compartments 14, 16, 18, and 20 held the coloring toner of cyanogen, a Magenta, and yellow ** black, respectively, and approached the openings 30, 32, 34, and 36 of the bottom wall of each of these taper-like compartments 14, 16, 18, and 20 in the interior possible [rotation] are formed, respectively.

[0011] The rotation drive of each developing rollers 22, 24, 26, and 28 is carried out around those medial axes 38, 40, 42, and 44, respectively, and each of these rollers are connected to the separate voltage sources 45, 47, 49, and 51, respectively. The voltage generated on the developing roller as which either of the rollers 22, 24, 26, or 28 was chosen by these voltage sources 45, 47, 49, and 51 consists of an alternating current component and a dc component. A dc component is abbreviation–400V and should be set up between the voltage of –100V of the latent–image field on the front face 48 of the photoconductivity drum 50, and the voltage of –600V of a non–imagining field. Thus, the set–up voltage drives the toners 29, 31, 33, and 35 charged in negative by electric field, and it is made to appear in the image field on the photoconductivity drum 50. furthermore, Photographic Science and Engineering It was indicated in a volume 26, No. 5, and ten September, 1982 / months. Takahaski It is based on others. "Mechanism of Canon Toner ProjectionDevelopme nt" ** -- in order to strengthen the appearance of an image as explained in detail into the paper of the title to say, the alternating voltage of about 200Hz and 1000Vpp is impressed

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades 68, 70, 72, and 74 in 20 (doctor blade). It can prevent being disturbed in case the color toner which appeared on the photo-conductor front face passes through the bottom of the next developer station by making developing rollers 22, 24, and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50. Therefore, this technique is ************ which a toner crosses a gap using the electric field impressed from the outside, and was made to be injected. LaserJet It is applicable to the injection development system used by the printer.

[0013] If this technique is used, when developing rollers 22, 24, 26, and 28 will move within compartments 14, 16, and 18 and 20 in near cyanogen, a Magenta, yellow, and a black toner the toner magnetically drawn and drawn by the colored toner to electrostatic on the front face of these rollers again — next, only when an alternating current and a direct current signal are

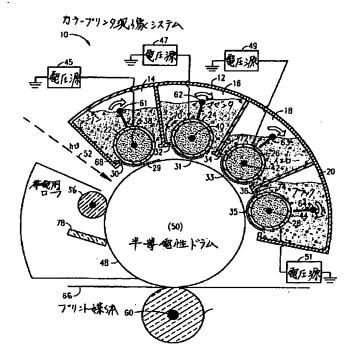
alternatively impressed to one of the requests of these developing rollers, it is injected according to the force of static electricity to the front face 48 of the photoconductivity drum 50 Thus, each coloring toner is alternatively injected on the front face of the photoconductivity drum 50, and the latent image produced by the laser beam 52 from a laser light source (not shown) on the front face of the photoconductivity drum 50 appears as a color image. As such an injected type development system, it quoted upwards, for example. Takahaski It is indicated in other papers and there are some which were developed by canon incorporated company. [0014] The color development system shown in <u>drawing 1</u> has the toner stirring blades 61, 62, 63, and 64 which were prepared in each compartments 14, 16, and 18 of cyanogen, yellow, a Magenta, and black, and the illustration position in 20 and which can be rotated again, and in order to maintain the homogeneity of the toner in the front face of developing rollers 22, 24, 26, and 28, these stirring blades act so that stirring of the amount of requests may be performed within a toner compartment. The color development system of drawing 1 has the roller 56 for electrification for giving the electrostatic suction force of desired level to the color toner which you are made to inject by each while giving the electrostatic charge of request level on the front face of the photoconductivity drum 50. The injection system 10 of <u>drawing 1</u> has the imprint roller 58 attached still more possible [rotation around a medial axis 60], and this imprint roller is positioned so that the front face 48 of the photoconductivity drum 50 may be approached very much in the position through which the print medium 66 or other suitable middle imprint members (not shown) pass like illustration. [0015] Therefore, the print medium 66 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 66. The print medium 66 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 66 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent. [0016] Next, the housing 80 of an electrophotography formula color printer is shown in drawing $\underline{2}$, and it is an applicant for this patent in this. LaserJet The input paper tray 82 of a gestalt and the output paper uptake bottle 84 which are used by the printer now are prepared. The side attachment wall 86 of the near side of printer housing of illustration excises the portion it is indicated with a sign 88 that can see the rough physical relationship over the form guide

[0016] Next, the housing 80 of an electrophotography formula color printer is shown in <u>drawing 2</u>, and it is an applicant for this patent in this. LaserJet The input paper tray 82 of a gestalt and the output paper uptake bottle 84 which are used by the printer now are prepared. The side attachment wall 86 of the near side of printer housing of illustration excises the portion it is indicated with a sign 88 that can see the rough physical relationship over the form guide mechanism for controlling paper movement of the color development system of <u>drawing 1</u> in the interior, and is drawn. Of course, paper 66 continues between the photoconductivity drum 50 and the imprint rollers 58, and it lets it pass 4 times as the development drum 50 receives a color toner from the rollers 22, 24, 26, and 28 which inject the color toner with which simultaneous impression of the alternating current explained above with reference to <u>drawing 1</u> and the direct current is carried out including the photoconductivity drum 50 attached by these form guide mechanisms approaching the above–mentioned imprint roller 58.

[0017] The form guide system shown in <u>drawing 2</u> contains the output fixing rollers (output fuser roller) 90 and 92 of a couple further. These fixing rollers 90 and 92 are the processes over the 360-degree above-mentioned path which happens continuously 4 times, and weld [62] the color image of cyanogen, yellow, a Magenta, and black one by one by the well-known method. the form guide to which, as for paper 62, the 1st curved first at this process — it sends in accordance with the inside of a member 94 — having — subsequently — between the form guide idlers 96 and 98 of the 1st couple bottom — a passage — further — the 2nd — having curved — a form — a guide — a member 104 is sent through between the form guide idlers 100 and 102 of the 2nd couple arranged around the paper deviation which paper 62 became upward from the fixing rollers 90 and 92 when paper 62 completed 3 times of the processes which pass

along above-mentioned 360-degree path, and which happen continuously — it is moved in the direction of an arrow 108 along the front face of a member 106, and is sent out from the paper exit port 110 by the side of the far edge of the paper uptake bottle 84 [0018] Various corrections can be added to the example mentioned above, without deviating from the pneuma and the range of this invention. There is no color development system of this invention in which it simplified to <u>drawing 1</u> and 2, and the outline was shown what meant limited ****** to use only by the method color mixture method of a decrease of the Magenta and black of a certain specific hardware, a design or cyanogen, and yellow for the purpose of giving instantiation explanation of the general principle of color image development operation. Therefore, although the gestalt of the simplified notional drawing explained the suitable example written here for such a reason, some are not limited to specific constitutional hardware and the designer and engineer who became skilled in the technology concerned can make the design, selection, and change, therefore, this application — this contractor can perform many mechanical design changes to <u>drawing 1</u> and <u>drawing 2</u>, without deviating from a claim

Drawing selection [Representative drawing]



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[JP,05-307310,A]
CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE INVENTION TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION or AMENDMENT
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

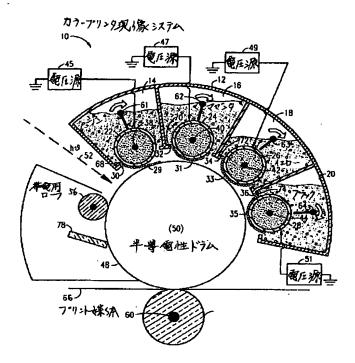
[Drawing 1] The notional cross section showing the color development system by one example of this invention.

[Drawing 2] The perspective diagram showing how the color development system of <u>drawing 1</u> is held into a color laser printer.

[Description of Notations]

- 10: Color printer development system
- 12: Carousel
- 14, 16, 18, 20: Color toner compartment
- 22, 24, 26, 28: Developing roller
- 29, 31, 33, 35: Toner
- 30, 32, 34, 36: Opening
- 38, 40, 42, 44: Medial axis
- 45, 47, 49, 51: Voltage source
- 48: Front face
- 50: Photoconductivity drum
- 58: Imprint roller
- 56: The roller for electrification
- 60: Medial axis
- 61, 62, 63, 64: Toner stirring blade
- 66: Print medium
- 68, 70, 72, 74: Doctor blade
- 80: Housing
- 82: Input paper tray
- 84: Output paper uptake bottle
- 86: Side attachment wall
- 90 92: Fixing roller
- 94,104:forms guide -- a member
- 96 98,100,102: Form guide idler
- 106: a paper deviation -- a member
- 110: Paper exit port

Drawing selection [Repr sentative drawing]



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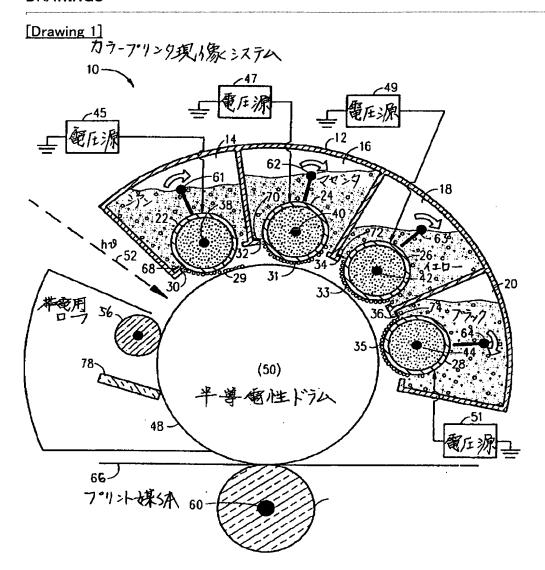
JAPANESE [JP,05-307310,A]
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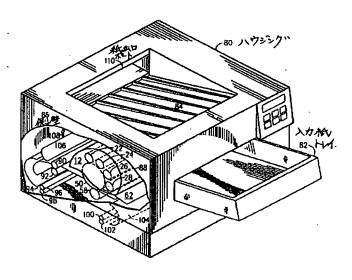
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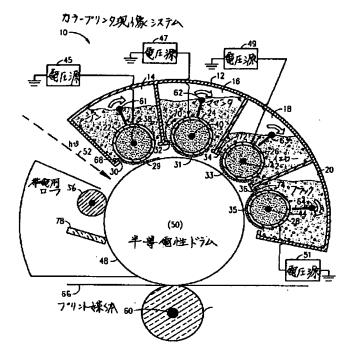
DRAWINGS



[Drawing 2]



Drawing selection [Repr sentative drawing]



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Back to oxiginal [JP,05-307310,A]

1. Amendment	April	27.	Heisei	13	(2001)
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CORRECTION or AMENDMENT

[Official Gazette Type] Printing of amendment by the convention of 2 of Article 17 of patent law

[Section partition] The 2nd partition of the 6th section [Date of issue] April 27, Heisei 13 (2001, 4.27)

[Publication No.] JP,5-307310,A

[Date of Publication] November 19, Heisei 5 (1993. 11.19)

[**** format] Open patent official report 5-3074

[Filing Number] Japanese Patent Application No. 4-354995

[The 7th edition of International Patent Classification]

GO3G 15/01 113 B41J 2/525

G03G 15/00 115

[FI]

B41J 3/00 B G03G 15/01 113 Z

[Procedure revision]

[Filing Date] December 17, Heisei 11 (1999, 12.17)

[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim

[Method of Amendment] Change

[Proposed Amendment]

[Claim(s)]

[Claim 1] The electrophotography formula color-print method which consists of a process of the following (b) to a (c).

(b) Supply cyanogen, yellow, a Magenta, and the color toner of black. The cyanogen prepared in the fixed position of the distance which is between the (b) aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, and a means to offer the developing roller of black, The color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, connecting with the (c) aforementioned developing roller and rotating the aforementioned developing roller is sent into

the front face of the aforementioned developing roller. It has and the aforementioned color toner is injected to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic.

[Claim 2] It is the electrophotography formula color-print method which the electrophotography formula color-print method according to claim 1 imprints the color image further developed from the front face of the aforementioned photoconductivity drum one by one on an adjoining print medium front face, and is characterized by the aforementioned print medium including the process which makes between the aforementioned drum and imprint rollers go back and forth. [Claim 3] The electrophotography formula color-print system characterized by providing the following A means to supply cyanogen, yellow, a Magenta, and the color toner of black The cyanogen prepared in the fixed position of the distance which is between the aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, the developing roller of black A means to connect with the aforementioned developing roller, to send and have the color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, rotating the aforementioned developing roller in the front face of the aforementioned developing roller, and to inject the aforementioned color toner to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic

[Claim 4] It is the electrophotography formula color-print system which an electrophotography formula color-print system according to claim 3 imprints the color image further developed from the front face of the aforementioned photoconductivity drum one by one on an adjoining print medium front face, and is characterized by the aforementioned print medium including a means to make between the aforementioned drum and imprint rollers go back and forth.

[Claim 5] An electrophotography formula color-print system according to claim 5 is an electrophotography formula color-print system characterized by including the height adjustment doctor blade characterized by preparing so that each of the aforementioned developing roller may be adjoined further, and controlling the amount of a color toner to the **** aforementioned photo-conductor drum.

[Claim 6] An electrophotography formula color-print system according to claim 4 is a means to which 360-degree path for the sequential imprint of the aforementioned print medium of each aforementioned color image is moved further.

The electrophotography formula color-print system characterized by including a means by which pass a fixing roller and even an output paper collection tray or a bottle guides the synthetic color image in which negatives were developed on the aforementioned print medium. [Claim 7] An electrophotography formula color-print system according to claim 6 is an electrophotography formula color-print system characterized by including the height adjustment doctor blade characterized by preparing so that each of the aforementioned developing roller may be adjoined further, and controlling the amount of a color toner to the **** aforementioned photo-conductor drum.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0012

[Method of Amendment] Change

[Proposed Amendment]

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades (doctorblade) 68, 70, 72, and 74 in 20. By making developing rollers 22, 24,

and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50, in case the color toner which appeared on the
 photo-conductor front face passes through the bottom of the next developer station, it can prevent carrying out disturbance. Therefore, a toner can apply this technique to the injection development system used by an applicant's for this patent LaserJet (registered trademark) printer which crosses a gap using the electric field impressed from the outside, and was made to be injected.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0015

[Method of Amendment] Change

[Proposed Amendment]

[0015] Therefore, the print medium 62 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 62. The print medium 62 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 62 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent.

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